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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,167	10/28/2003	Lenvis Liu	MXIC 1518-2	7158

22470 7590 12/15/2005

HAYNES BEFFEL & WOLFELD LLP
P O BOX 366
HALF MOON BAY, CA 94019

EXAMINER	
RICHARDS, N DREW	
ART UNIT	**PAPER NUMBER**
2815	

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/695,167	LIU ET AL.	
	Examiner	Art Unit	
	N. Drew Richards	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 October 2003* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/1/05 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 3 recites the limitation "the first conductive layer" in line 10. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (US Patent No. 5,804,489) in view of Agarwal et al. (US Patent No. 6,297,527 B1).

Yang et al. teaches in figure 7, for example, a wave-shaped capacitor formed over a base conductive layer 7, the base conductive layer over a base insulator layer 3 on a die 1, the capacitor including:

a wave-shaped pattern in the base conductive layer comprising at least two adjacent trenches in the base conductive layer;

a multilayer structure contoured over the base conductive layer, the multilayer structure comprising:

an insulating layer 17 and a second plate over the insulating layer; and

a interconnection layer over the multilayer structure including at least one interconnection with the second plate layer (not shown but taught on column 1 lines 20-25 that the second terminal of the capacitor, second plate, is connected to a reference voltage, one of ordinary skill in the art would recognize that connecting to a reference voltage necessarily includes an interconnection).

Yang et al. does not teach the multilayer structure including a first metal plate in electrical contact with the base conductive layer and the second plate being metal.

Agarwal et al. teach a multilayer structure for a capacitor having multilayer electrodes. Agarwal teach the use of a two layer electrode comprised of a platinum layer adjacent the dielectric and a platinum-rhodium layer beneath the platinum layer. Agarwal teach that this electrode is advantageous because it allows the use of a ferroelectric capacitors. Agarwal teach that the upper electrode of the capacitor can be the same materials as the lower electrode. Thus Agarwal teach a multilayer film for a

capacitor comprising a first metal plate (lower electrode), an insulating layer (ferroelectric), and a second metal plate (upper electrode).

Yang et al. and Agarwal are from the same field of endeavor. At the time of the invention it would have been obvious to one of ordinary skill in the art to use the multilayer structure of Agarwal (two layer lower electrode/ferroelectric film/two layer upper electrode) in the device of Yang et al. in order to form a capacitor that has faster read/write operations, reduces power consumption, and increases operational speed. Therefore, it would have been obvious to combine Yang et al. with Agarwal to obtain the invention of claim 1.

With regard to claim 2, the limitation of the trenches being formed by a lithographic or direct writing process are product-by-process limitations that do not structurally distinguish over the prior art. Nonetheless, Yang et al. teach forming the trenches using a lithographic process. The "minimum feature size" of the process is considered the minimum controllable size used in the process. In the case of Yang, the minimum controllable size corresponds to the width of the photoresist 9 (see figures 2 and 3). Thus, it is obvious that when combining the multilayer structure of Agarwal into the contoured surface of the lower polysilicon layer 7 of Yang figure 7, the multilayer structure would have a thickness along the sidewalls of the trench less than half the minimum feature size.

With regard to claim 3, since the lower electrode materials of Agarwal are formed conformal to the surface they are deposited on (see figures 1-21 of Yang) the first conductive layer (lower electrode) has the same structure as the base conductive layer.

With regard to claim 4, the limitation of the trenches being formed by a lithographic or direct writing process are product-by-process limitations that do not structurally distinguish over the prior art. Nonetheless, Yang et al. teach forming the trenches using a lithographic process. The "minimum feature size" of the process is considered the minimum controllable size used in the process. In the case of Yang, the minimum controllable size corresponds to the width of the photoresist 9 (see figures 2 and 3). Thus, it is obvious that when combining the multilayer structure of Agarwal into the contoured surface of the lower polysilicon layer 7 of Yang figure 7, the multilayer structure would have a thickness along the sidewalls of the trench less than half the minimum feature size.

Response to Arguments

6. Applicant's arguments with respect to claims 1-4 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Drew Richards whose telephone number is (571) 272-1736. The examiner can normally be reached on Monday-Friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

N. Drew Richards
AU 2815